PATENT

Docket No. RSW9-99-148

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS:	Stefanos Manganaris Stephen Zeller Keith Hermiz	EXAMINER: R. Bachner
		GROUP ART UNIT: 3623
APPLICATION NO.	09/507,004	
FILED:	February 22, 1999	
TITLE:	METHOD AND SYSTEM FOR RESEARCHING PRODUCT DYNAMICS IN MARKET BASKETS IN CONJUNCTION WITH AGGREGATE MARKET BASKET PROPERTIES	

CERTIFICATE OF MAIL

I hereby certify that this paper is being deposited with the U.S. Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, MAIL STOP APPEAL BRIEF-PATENTS, P.O. Box 1450, Alexandria, VA 22313-1450, Attention: Board of Patent Appeals and Interferences on December 4, 2003.

Lynn M. White
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Commissioner for Patents
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APPELLANTS' BRIEF

This brief is in furtherance of the Notice of Appeal filed in this case on

September 3, 2003 and received in the U.S. Patent Office on September 5, 2003. A Petition

for a one-month extension of time to file this Appeal Brief, from November 5, 2003 to

December 5, 2003 is enclosed in duplicate, along with a check in payment of the extension

fee.

This brief is transmitted in triplicate.

1.   **REQUIRED FEE**

The requisite fee ($330.00) set forth in §1.17(f) is authorized to be charged to

Deposit Account No. 50-0629.

2.   **REAL PARTY IN INTEREST**

The present application is assigned to International Business Machines

Corporation, having its principal place of business at New Orchard Road, Armonk, New York

10504. Accordingly, International Business Machines Corporation is the real party in interest.

3.   **RELATED APPEALS AND INTERFERENCES**

The appellant, assignee, and the legal representatives of both are unaware of

any other appeal or interference which will directly affect or be directly affected by or have a

bearing on the Board's decision in this appeal.

4.   **STATUS OF CLAIMS**

A.   Claims canceled: None

B.   Claims withdrawn from consideration but not canceled: None

C.   Claims pending: 1-15

D.   Claims allowed: None

E.   Claims rejected: 1-15

F.   Claims appealed: 1-15

Appealed claims 1-15 as currently pending are attached as Appendix A hereto.

5.   **STATUS OF AMENDMENTS**

No amendment after final was filed in the present case. A Reply under 37

C.F.R. §1.112 was filed on January 30, 2003 and resulted in the final Office Action appealed

herein.

6.   **SUMMARY OF THE CLAIMED INVENTION**

The present invention is a method and system for data mining and analysis in

which all of the elements of a transaction, e.g., all of the purchased items in a particular

market basket, are characterized in the aggregate according to predetermined attributes. For

example, a basket as a whole may be characterized as containing "high margin items";

"perishable goods"; "entertainment-related luxury items", etc. In accordance with the present

invention, these attributes are identified and an "imaginary item" is included in the transaction

for each market basket grouping that possesses an identified attribute. As described in the

specification, an "imaginary item" is not an actual item and does not describe an actual item.

Rather, an imaginary item is a designation indicating the existence of a property of the basket

as a whole (e.g., the basket contains food items or the basket contains predominantly "high-

end" items), which designation is "added" to the basket to enable identification of the

property. When the data is subjected to traditional association analysis, the imaginary items

are included in the analysis and may be utilized to, for example, identify frequent item sets

that are typically found in market basket groupings having the identified characteristics.

U.S. Patent No. 6,377,934 to Chen et al.

Chen teaches techniques for grouping data in a data warehouse: A method of creating a

database for organizing information from one or more sources according to a data schema,

such as a reverse star schema, which can be selected from a set of pre-defined data model

templates. Chen also mentions that the method includes a step of defining entities for

transactions and/or events and their attributes, to form a customized group of customer activity

components that are relevant to a particular application. Events can be arranged into customer

activity components. Components can be organized into one or more customized groups.

Chen further mentions that the method provides users with the capability to define application-

specific entities in customer activity components, by, for example, selecting attributes from a

predefined list of attributes or by defining their own. An embodiment according to the Chen

invention can also provide analysis functions of database contents, such as market basket

analysis for customer buying behavior.

U.S. Patent No. 6,317,722 to Jacobi et al.

U.S. Patent No. 6,317,722 to Jacobi et al. teaches a computer-implemented service for

recommending products or other items to a user based on a set of items known to be of interest

to the user, such as a set of items currently in the user's electronic shopping cart. In essence,

the Jacobi teaching discloses a computerized version of the well-known concept of "pushing"

items that may be of interest to a user by selecting items to be pushed to the user based upon

other items they have purchased or shown interest in. Alternatively, the system of Jacobi

teaches the pushing of items to potential purchasers based upon correlation between items

currently in the consumer's electronic market basket and other items that other purchasers of

the same items in the market basket have also purchased. In other words, if a consumer has in

a market basket three books on the subject of house renovation, the system of Jacobi might

present to the purchaser the option of purchasing a fourth book on the same subject.

Alternatively, the Jacobi system might look at the fact that the purchaser has three books on

kitchen renovation in the market basket and then analyze other users who purchased the same

books and identify other items also purchased by the other users and suggest those items to the

current purchaser.

7.   **ISSUES**

      A.   ISSUE INVOLVING CLAIMS 1-15

            1.   Whether the Examiner improperly rejected the claims because the

cited prior art fails to teach or suggest the concept of "imaginary items" as claimed in each of

the pending claims.

8.   **GROUPING OF CLAIMS**

      A.   Claims 1-15 stand or fall together.

9.   ARGUMENT

The Examiner has not Established a *prima facie* Case of Obviousness

As set forth in the MPEP:

> To establish a *prima facie* case of obviousness, three basic criteria must be met.
> First, there must be some suggestion or motivation, either in the references
> themselves or in the knowledge generally available to one of ordinary skilled in
> the art, to modify the reference or to combine reference teachings. Second,
> there must be a reasonable expectation of success. Finally, the prior art
> reference (or references when combined) must teach or suggest all the claim
> limitations. MPEP 2143

Neither of the prior art references, either alone or in combination, teach or suggest the

claimed invention.

As indicated in the Responses to the previous Office Actions, the present invention

introduces the concept of "imaginary items" to provide an analyst or analysis program with

the ability to enhance the analysis of market basket groupings by using aggregate basket

properties along with actual items and their properties in the market basket analysis. The term

"imaginary item" is clearly defined in the present specification, beginning at the bottom of

page 15 and carrying over onto page 16. Specifically, an imaginary item is a designation

indicating the existence of a particular property, which designation is "added" to the basket to

identify this property as a characteristic of the basket. They enhance the market basket data by

categorizing the market basket as possessing the designated property. No actual items are

added to the basket or presented to the user based upon the characterization of the basket and

the embedding of the imaginary item in the basket. Further, as set forth on page 16 of the

specification, the imaginary items are deliberately identified using a different code so that they can be distinguished from data identifying real items.

The claims of the present invention clearly recite, among other things, the embedding of the imaginary item in the aggregate sales data for market basket groupings (e.g., claim 1, "for all market basket groupings which have been determined to display characteristics, enhancing said aggregate sales data concerning each market basket grouping by embedding said aggregate sales data and "imaginary item" for each characteristic(s) displayed by each market basket grouping".).

Neither Chen nor Jacobi teach or suggest this feature. The Examiner acknowledges that Chen does not include this feature; with regard to Jacobi, the Examiner asserts that Jacobi somehow teaches the concept of imaginary items as defined in the specification, but makes no citation to the Jacobi reference in support of this assertion. In fact, Jacobi is devoid of any teaching of such a concept. At best, Jacobi teaches the identification of characteristics which could be used with the present invention to create an imaginary item; however, Jacobi simply says that if a market basket possesses a particular characteristic, then the purchaser who owns the market basket will be presented with a recommendation to purchase a particular item or items (actual items) based upon these characteristics. Nowhere in Jacobi is there a suggestion of embedding data in the market basket so that it will possess data indicating these characteristics, which data is then used by analysts to identify items that might be desired by particular groupings of purchasers.
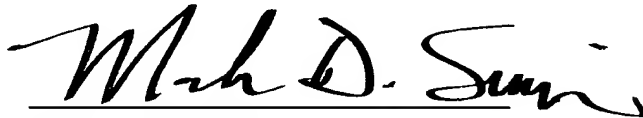
Without teaching or suggestion, it is improper to reject the claims based upon Chen or

Jacobi, either alone or in combination.

10.   CONCLUSION

For the foregoing reasons applicants respectfully request this Board to overrule the

Examiner's rejections and allow claims 1-15.

Respectfully submitted:

12/4/03
Date

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APPENDIX A

CLAIMS INVOLVED IN THIS APPEAL:

1. A computer-implemented method of processing market research data including aggregate sales data concerning items grouped in a plurality of market baskets and sold during retail sales transactions of a retailer, said method comprising the steps of:

receiving analysis parameters from said retailer for use in analyzing said market research data;

receiving said aggregate sales data;

analyzing said aggregate sales data based on said market basket groupings and determining if any of said market basket groupings display characteristics identified by said analysis parameters; and

for all market basket groupings which have been determined to display said characteristics, enhancing said aggregate sales data concerning each market basket grouping by embedding in said aggregate sales data an "imaginary item" for each characteristic(s) displayed by each market basket grouping.

2. The method as set forth in claim 1, wherein said method further comprises the steps of:

performing association analysis on said enhanced market basket grouping data to generate association rules and frequent itemsets; and

displaying and archiving said association rules and frequent itemsets.

3. The method as set forth in claim 2, further comprising the step of:

processing said association rules and frequent itemsets to develop conclusions about said marketing research data.

4. The method as set forth in claim 2, wherein said aggregate sales data comprises merchandise information, said merchandise information including:

an identification element identifying each sold item;

transactional information corresponding to each sold item; and

financial information corresponding to each sold item; and wherein said merchandise information is input to a merchandise taxonomy to establish logical links between said identification elements, said transactional information, and said financial information so that said merchandise information can be utilized for market basket analysis.

5. The method as set forth in claim 4, wherein said aggregate sales data comprises information linking the merchandise information of each sold item in a particular market basket to all other items in said particular market basket.

6. A computer program product recorded on computer readable medium for processing market research data including aggregate sales data concerning items grouped in a plurality of market baskets and sold during retail sales transactions of a retailer, comprising:

computer readable means for receiving analysis parameters from said retailer for use in analyzing said market research data;

computer readable means for receiving said aggregate sales data;

computer readable means for analyzing said aggregate sales data based on said market basket groupings and determining if any of said market basket groupings display characteristics identified by said analysis parameters; and

computer readable means for enhancing said aggregate sales data concerning each market basket grouping by embedding in said aggregate sales data an "imaginary item" for each characteristic(s) displayed by each market basket grouping, for all market basket groupings which have been determined to display said characteristics.

7. The computer program product as set forth in claim 6, further comprising:

computer readable means for performing association analysis on said enhanced market basket grouping data to generate association rules and frequent itemsets; and

computer readable means for displaying and archiving said association rules and frequent itemsets.

8. The computer program product as set forth in claim 7, further comprising:

computer readable means for processing said association rules and frequent itemsets to develop conclusions about said marketing research data.

9. The computer program product as set forth in claim 7, wherein said aggregate sales data comprises merchandise information, said merchandise information including:

an identification element identifying each sold item;

transactional information corresponding to each sold item; and

financial information corresponding to each sold item; and wherein said merchandise information is input to a merchandise taxonomy to establish logical links between said identification elements, said transactional information, and said financial information so that said merchandise information can be utilized for market basket analysis.

10. The computer program product as set forth in claim 9, wherein said aggregate sales data comprises computer readable means for linking the merchandise information of each sold item in a particular market basket to all other items in said particular market basket.

11. A system of processing market research data including aggregate sales data concerning items grouped in a plurality of market baskets and sold during retail sales transactions of a retailer, said system comprising:

means for receiving analysis parameters from said retailer for use in analyzing said market research data;

means for receiving said aggregate sales data;

means for analyzing said aggregate sales data based on said market basket groupings and determining if any of said market basket groupings display characteristics identified by said analysis parameters; and

means for enhancing said aggregate sales data concerning each market basket grouping by embedding in said aggregate sales data an "imaginary item" for each characteristic(s) displayed by each market basket grouping for all market basket groupings which have been determined to display said characteristics.

12. The system as set forth in claim 11, wherein said system further comprises:

means for performing association analysis on said enhanced market basket grouping data to generate association rules and frequent itemsets; and

means for displaying and archiving said association rules and frequent itemsets.

13. The system as set forth in claim 12, further comprising:

means for processing said association rules and frequent itemsets to develop conclusions about said marketing research data.

14. The system as set forth in claim 12, wherein said aggregate sales data comprises merchandise information, said merchandise information including:

an identification element identifying each sold item;

transactional information corresponding to each sold item; and

financial information corresponding to each sold item; and wherein said merchandise information is input to a merchandise taxonomy to establish logical links between said identification elements, said transactional information, and said financial information so that said merchandise information can be utilized for market basket analysis.

15. The system as set forth in claim 14, wherein said aggregate sales data comprises information linking the merchandise information of each sold item in a particular market basket to all other items in said particular market basket.